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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,201	09/26/2003	Peter Elenius	72145-011600	8970
33717	7590	05/05/2005	EXAMINER	
GREENBERG TRAURIG LLP 2450 COLORADO AVENUE, SUITE 400E SANTA MONICA, CA 90404			MOHAMEDULLA. SALEHA R	
			ART UNIT	PAPER NUMBER
			1756	
DATE MAILED: 05/05/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,201

Applicant(s)

ELENIUS ET AL.

Examiner

Saleha R. Mohamedulla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/26/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 92603.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-26 are pending.

Specification

1. The abstract of the disclosure is objected to because it appears that the last sentence of the abstract should be deleted. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities: the first line of the specification does not recite a proper U.S. Serial No.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 8-10, 12-16 and 21-26 are rejected under 35 U.S.C. 102(b) as being anticipated by US# 5,585,210 to Lee et al.
5. Lee teaches a mask pattern for manufacturing a resist pattern. The mask pattern is provided with an additional mask pattern whose size is such that resist patterns are not formed after exposure on the spaces thereof (Abstract). See figures 4 and 5. A photoresist layer can function as a passivation layer. Lee also teaches manufacturing resist patterns by forming a photoresist (polymer) layer on a substrate, exposing a portion of the resist layer using the mask

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pattern and additional pattern, and developing the exposed photoresist layer (col. 4, lines 20-30). After developing the photoresist layer inherently has a second optical property as the layer was both exposed and developed. Reflectivity is inherently reduced after developing because the thickness of the photoresist layer is reduced. The additional pattern may be positioned in the crossing spaces of the matrix pattern and connected to the edges of the matrix pattern or may be inserted into the spaces. Lee also teaches that the size of the additional pattern is below the resolution of light for the apparatus used (col. 4, lines 35-40). Figure 5 shows the additional mask pattern disposed within the spaces of the main mask portions. The additional mask pattern is sized to prevent exposure light from overexposing the resist pattern through the spaces (col. 6, lines 20-45). Simulation was performed in order to determine appropriate sizes of the additional mask pattern. Lee discloses the results for various values of A, B, x and y (col. 6, lines 60 – col. 7, line 25). Lee also teaches the main mask pattern and additional mask pattern may be made from chrome (col. 6, lines 8-13). Therefore, Lee teaches UV light-blocking materials for both the full-depth producing pattern (main) and the partial-depth producing pattern (additional). The partial-depth producing patterns each have a size less than the minimum resolvable size and each area is spaced from another area by a distance less than the minimum resolvable size, as shown in Figure 5 and described in columns 6 and 7. The figures also show lines of chrome. Because resist patterns are not formed after exposure using the additional mask pattern, Lee teaches developing the photoresist film such that it has a second thickness, where the second thickness is smaller than the first thickness.

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6. Claims 1-6, 8-10 and 12-26 are rejected under 35 U.S.C. 102(b) as being anticipated by US# 5,725,973 to Han et al.

7. Han teaches a mask including a transparent substrate, and opaque mask pattern and an optical transmittance control film pattern for suppressing proximity effect in the optical transmission area (Abstract). Figure 12 shows an embodiment of the mask. Han teaches chromium for the opaque mask pattern and the transmittance control film (col. 5, lines 5-10). Han teaches a rectangular opaque mask pattern formed on the transparent substrate for defining an optical transmission area between the edges of the rectangular opaque mask pattern by selectively blocking light. The optical transmission control film is used to suppress proximity effect. Han teaches that the control film pattern can be formed on a part of the intersection area of the optical transmission area (col. 5, lines 10-20). Han teaches the widths and lengths of the optical transmittance control film, which are below the resolution limit (col. 7, lines 45-55). Figure 13 shows the image when transferred to a photoresist (col. 9, lines 5-20). A photoresist layer can function as a passivation layer. A photoresist is also a polymer. Regions 19a indicate where the optical transmittance control film is transferred. The shape of the control film is discernable on the surface of the resist. The control film shape is a marking. Because the marking has a size, it includes alphanumerical information, namely, the size dimensions. The thickness produced by the optical transmittance control film would be smaller than the thickness produced by the opaque mask pattern, as shown in Figure 13, for example. Therefore, Han teaches UV light-blocking materials for both the full-depth producing pattern (opaque mask pattern) and the partial-depth producing pattern (optical transmittance control film pattern). The partial-depth producing patterns each have a size less than the minimum resolvable size and each

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area is spaced from another area by a distance less than the minimum resolvable size. The figures show lines of chrome. After developing the photoresist layer inherently has a second optical property as the layer was both exposed and developed. Reflectivity is inherently reduced after developing because the thickness of the photoresist layer is reduced.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 5,585,210 to Lee et al.

10. Lee specifically shows lines of chrome but does not specifically teach circles of chrome. Lee teaches that the shape of the additional pattern is not restricted and any pattern that can exclude undesirable pattern formation may be employed (col. 4, lines 40-45). Therefore, it would be obvious to one of ordinary skill in the art to make circles of chrome, as Lee teaches that the shape is not restricted. One of ordinary skill in the art would have a reasonable expectation of success as the circular shape can exclude undesirable pattern formation.

11. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 5,725,973 to Han et al. in view of US# 5,585,210 to Lee et al.

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12. Han teaches the limitations discussed above. Han does not specifically teach circles of chrome. Lee teaches that the shape of the additional pattern is not restricted and any pattern that can exclude undesirable pattern formation may be employed (col. 4, lines 40-45). The references are analogous art as they are drawn to optical proximity effect correction. Therefore, it would be obvious to one of ordinary skill in the art to make circles of chrome, as Lee teaches that the shape is not restricted. One of ordinary skill in the art would have a reasonable expectation of success as the circular shape can exclude undesirable pattern formation.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (571) 272-1387. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Saleha R. Mohamedulla
Patent Examiner
Technology Center 1700
March 22, 2005